

P l a n k t o n C o m m i t t e e

By J.H. FRASER

Belgium

(E. Leloup)

Plankton research in Belgium in 1966 was concerned with:

Phytoplankton of a dock in the harbour of Ostend.

Phytoplankton of the sluice-dock (bassin de chasse) of Ostend in relation to the oyster culture.

Floristical study and statistics of plankton samples collected during previous years at the lightvessel "West-Hinder".

The programme for 1967 is expected to include:

Qualitative and quantitative phytoplankton: 1) a dock in the harbour of Ostend and 2) the sluice-dock (bassin de chasse) of Ostend in relation to the oyster culture.

Systematics and statistics.

Probably, variations of the planktonic quantities, chemical composition.

Study of certain minor elements present in sea-water and their possible influence on the variations of the planktonic quantities.

Denmark

(Vagn Kr. Hansen)

Atlantic. In the period January 20 to May 1, two transatlantic sections were operated by the "Dana": from the Azores to the Virgin Islands and northwards to the Bermuda Islands, and from here eastwards to the position 43°00'N-12°10'W. En route a dense grid of stations was operated in the Sargasso Sea. Numerous hauls were taken with various plankton nets in order to catch eel eggs and larvae.

At 38 stations 229 plankton samples were taken with a 8 litre and a 100 litre watersampler in vertical series down to 200 m.

The Irminger Sea. Plankton samples were taken with 8 litre and 100 litre water bottles in vertical series down to 1000 m at 8 stations.

West Greenland. From July 9 to 13 were operated three sections across Fylla Bank, Lille Hellefiske and Store Hellefiske Bank. In total 48 stramin hauls were taken.

Kattegat. Measurements of the primary production and sampling of zooplankton with 8 litre water bottles were continued from the lightvessel "Anholt Nord". The lightvessel "Læsø Rende" stopped operations in December 1965. The investigations were transferred to the lightvessel "Aalborg Bugt". L.V. "Halsskov Rev", in the Great Belt, was included in the plankton investigations in February 1966.

Finland

(E. Halme)

As in previous years, quantitative sampling of plankton was carried out with the R.V. "Aranda" at fixed stations in the northernmost part of the Baltic.

Some plankton work was also done at Tvärminne Zoological Station, Marine Biological Station University of Turku, Husö Biological Station (Åbo Akademi) and Biological Station at Krunnit (Oulu University).

France

(M.-L. Furnestin)

I. Travaux de l'Institut des Pêches Maritimes. Paris.

Poursuite de l'étude du plancton du Golfe de Gascogne à partir de prélèvements saisonniers (février, mai, août et novembre) portant sur les années 1964, 1965 et 1966, et effectués entre la Bretagne et la côte nord de l'Espagne:

- l'analyse volumétrique du zooplancton (1964-65), traduite en cartes de répartition annuelles et saisonnières, a donné lieu à une communication au Comité du Plancton (1966);
- l'inventaire des oeufs et larves de poissons, notamment des espèces commerciales, est terminé pour 1964. Une trentaine d'espèces ont été déterminées et leur répartition géographique et saisonnière transcrite en cartes;
- l'étude des constituants des communautés planctoniques dans le Golfe de Gascogne a été plus particulièrement orientée vers les Chaetognathes et les Méduses.

Programme pour 1967

- Inventaire des oeufs et larves des prélèvements de 1965 et 1966.
- Etablissement des relations entre les concentrations de plancton, notamment de l'ichthyoplancton, et les conditions hydrologiques dans le Golfe d'après les campagnes de l'I.S.T.P.M.

II. Travaux des Laboratoires conchyliques de l'Institut des Pêches Maritimes.

Les travaux précédemment entrepris ont été poursuivis, et notamment:

- Recherche et examen de l'évolution des larves de mollusques comestibles (*Ostrea edulis*, *Crassostrea angulata*, *Mytilus edulis*) dans les divers centres de reproduction des côtes de la Manche occidentale et de l'Atlantique.
- Récolte et dénombrement des espèces du microplancton des estuaires ou des claires en relation avec les variations des différents facteurs physico-chimiques.
- Teneur des eaux libres et des eaux des claires en pigments chlorophylliens et en matières organiques dissoutes.
- Verdissement des huîtres en claires. Le processus et la nature de la pigmentation de *Navicula ostrearia* ont été définis par l'analyse des chlorophylles, caroténoïdes et phéo-pigments. Simultanément, l'importance des divers facteurs du verdissement a été étudiée.

Les mêmes travaux seront continués en 1967.

III. Travaux du Laboratoire de Biologie animale (Plancton) Faculté des Sciences. Marseille.

- Rédaction d'un mémoire sur les Chaetognathes de surface et de profondeur de la zone équatoriale et tropicale africaine (d'après les récoltes du Centre de Pointe-Noire).
- Planctonologie appliquée: recherche des relations plancton-hydrologie, plancton-ichthyologie, plancton-conchyliculture (Mise au point publiée dans Rev.Trav.Inst.Pêches Marit.).
- Publication: "Chaetognathes des eaux africaines".- Atlantide Report, 1966, 9, p. 105-35, 17 figs. (M.-L. Furnestin).



Programme pour 1967

- Mise au point des observations sur le thème antérieurement proposé par le Conseil International: "Usage des appareils enregistreurs dans la recherche planctonologique".
- Recherches biochimiques sur le zooplancton: dosage des protéines et des acides aminés.

Germany

A. Biologische Anstalt Helgoland (H.J. Aurich)

With a view to ascertaining the correlations between the quantity and distribution of the phytoplankton and the physical and chemical conditions of the milieu the quantitative plankton samples taken during the cruise of the R.V. "Meteor" in the Indian Ocean in 1965 have been worked up. The distribution of copepods in the North Atlantic on the basis of vertical hauls has been studied with special reference to the racial differentiation of some species.

(E. Hagmeier)

Standing stock of plankton, primary productivity, respiration, and important factors for plankton development have been studied in 1966 as a continuation of the ecological programme of the Institute.

1) At the "Kabeltonne", between Heligoland and the Sandy Island, surface sampling was carried out three times per week for determinations of temperature, salinity, nutrients ( $\text{NH}_3$ ,  $\text{NO}_2$ ,  $\text{NO}_3$ ,  $\text{PO}_4$ ), seston, chlorophyll a, albumen equivalents, phytoplankton and zooplankton, and less frequently for experiments on primary productivity and respiration.

2) Between March and October, monthly cruises to the mouth of the river Elbe, to the Hever and to lightvessel P 8 were carried out with collections of hydrographical, chemical, and planktological data. The object was to study the gradual change of water properties and plankton populations between coastal and open-sea areas and the influence of the different water bodies in the German Bight on hydrographical conditions and plankton species observed near Heligoland. Possible correlations to weather factors will be investigated.

3) Responses of different phytoplankton and zooplankton species and populations to special light and temperature conditions were analysed in incubator and field experiments with organisms from net hauls and cultures.

4) Total numbers of plankton samples taken in 1966:

606 water-bottle samples for phytoplankton counts,  
278 net hauls for quantitative zooplankton estimations,  
163 samples for determinations of seston, chlorophyll a, and  
albumen equivalents,  
205 samples for experiments on assimilation and respiration.

B. Institut für Meeresforschung Bremerhaven

No plankton research in 1966 as Dr. Wellerhaus was in India.

C. Institut für Hydrobiologie und Fischereiwissenschaft in Hamburg (J. Kinzer)

During 1966 the following planktological investigations have been done at the Institute:

1) Investigations on the distribution of Appendicularia in the North Atlantic, collected during the International Geophysical Year (IGY) by R.V. "Gauss" (Prof. Dr. A. Bückmann).

2) Studies on the quantitative distribution of zooplankton in the deep scattering layer from samples collected in the eastern North Atlantic (cruise 3, R.V. "Meteor"). (Dr. J. Kinzer).

3) Studies on the diurnal vertical migration of zooplankton in tropical waters taken during a cruise with R.V. "Reine Pokou" in the Gulf of Guinea (Dr. J. Kinzer).

4) Continuation of the comparative experiments on the determination of settled volume and displacement volume of plankton samples (Prof. Dr. K. Lillelund and Dr. J. Kinzer).

5) Experiments on the quantitative relations between the mortality of the fish fry and carnivorous cyclopids (Prof. Dr. K. Lillelund).

D. Institut für Seefischerei in Hamburg

No information.

E. Institut für Küsten- und Binnenfischerei in Hamburg (P.F. Meyer-Waarden)

Plankton sampling for the study of the distribution of Crangon larvae in relationship to hydrographic and other factors along the German North Sea coast were continued from April to October.

Routine investigations on the plankton composition in the Elbe estuary have also been continued. 125 plankton samples were taken at the "Alte Liebe" station at Cuxhaven and analysed.

F. Institut für Meereskunde, Kiel (J. Krey)

1) Continuation of long-term observations at two stations in the Kiel Bight, where we observed  $S\%$ ,  $t^\circ$ ,  $O_2$ ,  $PO_4-P$ ,  $P$ , chlorophyll, protein, particulate material, netted plankton (3 different mesh-sizes), particulate P.

2) Participation in a cruise of R.V. "Anton Dohrn" in order to investigate the spring bloom of the phytoplankton in the Baltic Sea with determinations of particulate material, chlorophyll, particulate C, protein.

3) Short-term observations aboard the lightvessel P 8, west of Heligoland, to observe daily variations in the concentration of phyto- and zooplankton, chlorophyll, protein, particulate material and abiotic parameters from January to December, every 2 days, from surface to the bottom.

4) Development of a micro-method to determine the concentration of nucleic acid.

5) Observations on damaged phyto- and zooplankton, caused by rough sea conditions.

6) Secchi-depths determinations in the North Sea and the Baltic.

7) Further investigations to calibrate the chlorophyll-methods.

Iceland

(I. Hallgrímsson)

Phytoplankton

Measurements on primary production in Icelandic waters by means of the  $C^{14}$  technique were carried out at the standard depths 0, 10, 20 and 30 m. As previously, samples for quantitative analysis of the phytoplankton were collected wherever productivity was measured.

In Faxa Bay, and in the coastal waters off the bay, the productivity was measured at 24 stations in 11 surveys. The measurements were first made at the end of March.

During the periods 8-24th of May and 4-11th of June, productivity was measured at 53 and 44 stations respectively, in the coastal and oceanic waters off the north and north-east coast of Iceland.

Zooplankton

As in previous years a zooplankton survey was carried out in west and north Icelandic waters from the beginning of May to the end of June.



From the middle of June to the middle of December zooplankton samples were collected on Icelandic herring grounds.

Zooplankton was also collected in Faxaflói during the whole year (13 surveys).

The zooplankton was caught by a Hensen net between 50 and 0 m and a high-speed sampler was also used. Most of the material was worked up at sea by a short-cut method.

A continuous plankton recorder survey was continued on the Reykjavik-New York route and on the Reykjavik-Leith route.

#### Ireland

(F.A. Gibson)

A nil return is submitted for 1966.

#### Netherlands

(P. Korringa)

In reports to the Demersal Fish (~~Northern~~) Committee and to the Pelagic Fish (~~Northern~~) Committee plankton work carried out by the Netherlands on the distribution and quantity of eggs and larvae of fish has been recorded.

Periodical observations in the coastal water of IJmuiden to detect plankton blooms which could lead to adverse conditions for fish and shellfish were continued in 1966.

#### Norway

University of Oslo (T. Braarud)

##### I. Phytoplankton surveys

a) Ullsfjord in Troms. - An all-year quantitative phytoplankton survey in 1962-63, related to hydrographical conditions has been completed and a report in Norwegian submitted. Publication in English is being prepared. (B.R. Heimdal).

b) Trondheimsfjord. - An investigation similar to (a) has been continued and a report in Norwegian is being prepared. (E. Sakshaug).

c) Hardangerfjord. - The report on the phytoplankton in 1955-56 has been completed. (T. Braarud, B. Føyn, P. Hjelmfoss, Aa. Øverland).

d) Oslofjord. - A report in Norwegian has been completed on the quantitative phytoplankton survey in 1962-65, which forms part of a comprehensive study of the effect of pollution. (T. Braarud, I. Nygaard).

e) North Atlantic. - A project for studying the phytoplankton populations at great depths, especially during winter mixing, has been started. Samples have been collected at weatherships A and M. (P. Brettum).

##### II. Special phytoplankton studies

a) Taxonomic studies with the use of electron microscope have been continued, on coccolithophorids (K.R. Gaarder) and on diatoms (G.R. Hasle).

b) The survey of nanno-phytoflagellates in Norwegian coastal waters has been continued. (J. Throndsen).

c) "Brown water" in the coastal waters of Southern Norway in October-November 1966. (See also under Institute of Marine Research, The Fishery Directorate). Cultures were established of the predominant species, Gyrodinium aureolum Hülbert, and will be subjected to further studies. (B.R. Heimdal, J. Throndsen).

### III. Zooplankton

a) Studies on the ecology of planktonic larvae of marine bottom invertebrates were continued throughout 1966. (T. Schram).

b) An investigation of the distribution of some selected species of zooplankton as related to pollution and water exchange in the Oslofjord, was completed. A report was prepared for restricted distribution only. (E. Beyer, A. Dybwad, J. Versvik).

Institute of Marine Research, Bergen (G. Berge)

#### Phytoplankton

The particle distribution was continuously recorded at 5 m's level with Berge's transparency meter on board the research vessels. From such recordings the relative distribution of plankton was estimated for the following areas and periods:

West Greenland, March 10 - May 13  
Barents Sea , March 19 - February 2  
Barents Sea &  
Norwegian Sea , August 25 - September 10  
Skagerrak , June 7 - July 16  
Norwegian Sea , June 15 - July 16.

During October and November a situation of "brown water" along the southern and western coast of Norway was investigated. The "brown water" was caused by heavy concentrations of a naked flagellate (Gyrodinium aureolum). Fish mortalities were reported mainly from fish farms. Experiments failed to demonstrate any toxic effect of the discoloured water. However, serious reduction of the oxygen content during night was recorded in such water down to values being critical for fish. A high oxygen demand in the densely populated fish farms together with the low oxygen content during night might be responsible for the reported fish mortalities.

#### Zooplankton

Sampling was continued at the permanent oceanographical stations along the Norwegian Coast. Plankton volumes were larger than in 1965, except near North Cape. Weathership station M was worked throughout the year.

No salps were observed, neither in coastal waters nor at station M.

During April-May zooplankton was collected with Juday nets and Clarke-Bumpus plankton samplers on the coastal banks between Stad and Vesterålen on cruises with the R.V. "G.O. Sars" and R.V. "Helland Hansen". The distribution of fish eggs and larvae, especially of herring and cod, was mapped. Drift, vertical distribution and vertical migration of herring larvae were studied during two 24 hours' stations.

During the cruise of R.V. "Johan Hjørt" in West-Greenland waters in April-May, vertical hauls were made with Hensen net for the sampling of cod eggs and larvae.

In October-November, Clarke-Bumpus plankton samplers were used from R.V. "Johan Hjørt" in the north-eastern part of the North Sea and in the Skagerrak in search of herring larvae. Very few larvae, if any, were found.

#### Krill (euphausiids)

Special cruises were made with the R.V. "Peder Rønnestad" in the fjords north and south of Bergen in January-February, May-June, August and November. With a 3-foot Isaacs-Kidd trawl, hauls were made in various depths, mainly during night, some also during the day. Vertical hauls with a Juday net were made in May and June for collecting krill eggs and larvae. In various localities the krill were attracted by projectors on the shore and caught with a dip net. The commercial catches of krill for use as fish food amounted to 3000 kg. The material has been worked up and a report was prepared for the ICES meeting in Copenhagen in October. A preliminary report has been published. The investigations are being continued.



Poland

(W. Mańkowski)

Polish plankton investigations in 1966 were carried out in the Baltic Sea, North Sea, NW-Atlantic and in the coastal waters of NW-Africa.

The investigations in the Baltic were conducted throughout the year, including the entire Southern Baltic from the Arkona Deep to the Gdańsk Bay. Material was collected for assessing the vertical and horizontal distribution of phytoplankton and zooplankton (macro-, ichthyo- and microplankton).

The vertical catches were made by -

Hensen net No. 3 xxx - 426 samples,  
Copenhagen standard No. 25 xxx - 224 samples,  
Nansen net No. 8 xxx - 83 samples.

The volume of plankton was measured on the basis of the samples taken by the Hensen net. This method of determining the biomass of zooplankton has been undertaken for the first time in the Polish investigations, previously the weight of wet and dry mass of plankton was determined.

The material collected by the Hensen and Nansen nets has been segregated into macro-, micro- and ichthyoplankton, and further studies will show the vertical and horizontal distribution of particular plankton species. The phytoplankton was also investigated.

In 1966 two cruises in the North Sea were undertaken, one in the period May-June, the other in September-October, when the following nets were used:-

Hensen net - 223 samples  
Copenhagen net - 143 samples  
ringtrawl (210 cm) - 40 samples.

The volume of material taken from the Hensen net has been measured. Material sampled by means of the ringtrawl was segregated and in particular the ichthyoplankton has been determined.

Plankton from the NW-Atlantic (150 samples) and from the NW-African coast (50 samples) was taken by means of an Apstein net for qualitative studies.

From material collected in the years 1963-1966, during cruises of the factory ships and of the SFI training vessel, the composition of the surface zooplankton over the NW-African shelf has been studied, especially the distinct seasonal changes in specific composition of zooplankton in the area from Cape Blanco to Bijougal.

During the year plankton investigations in the Firth of Szczecin were conducted with the aim of estimating the primary production (by the oxygen method) and also to show the relationship between the trophic links (primary production- phytophagous zooplankton) and the changing physico-chemical factors.

Portugal

(H. Vilela)

During 1966 we continued counting the oyster larvae in plankton samples caught in the estuaries of the Tagus, Sado and Mira.

The study of the copepods collected on the Portuguese coast during the cruise of the vessel "Faial" is going on, but had to be interrupted temporarily because of other studies that merited priority.

For 1967 the same programme is expected with the oyster larvae, the continuance of the identification of the copepods collected by "Faial" and if possible the collecting and study of fish larvae on the Portuguese south coast.

Spain

(J. Cuesta)

Instituto Español de Oceanografía

Au laboratoire de Santander on a poursuivi l'étude de la variation saisonnière du genre Ceratium et des Dinophyceae, suivant la méthode quantitative.

On a continué les prélèvements d'échantillons de plancton pour l'étude des oeufs et larves des huîtres et des poissons.

Le Laboratoire de Palma de Mallorca (Iles Baléares) a commencé à étudier l'influence du courant atlantique en Méditerranée du Sud et du Levant, par la détermination systématique et biologique des Foraminifères des échantillons recueillis en Mer d'Alborán pendant les campagnes de 1965 et 1966 avec le bateau océanographique "Xauen".

Au même Laboratoire on commence l'étude biologique des Foraminifères vivants en faisant des élevages par la méthode d'Arnold.

Au Laboratoire de Vigo on a continué l'étude systématique des échantillons du plancton au cours des inspections des installations de mytiliculture et ostréiculture.

Le Laboratoire de Malaga a continué les prélèvements d'échantillons de plancton spécialement dédiés à l'étude des oeufs et larves de poissons.

Au Laboratoire de Santa Cruz de Tenerife (Iles Canaries) a commencé l'étude du plancton de la région canarienne sur les échantillons prélevés par le laboratoire et durant les campagnes océanographiques du bateau "Tofiño" durant 1966 et 1967.

Durant lesdites campagnes du "Tofiño" on a commencé l'étude de la productivité primaire de la zone.

Instituto de Investigaciones Pesqueras

Durant l'année 1966, on a étudié le zooplancton néritique de Castellón de la Plana, et le phytoplancton et la production primaire de Catalogne.

Instituto Español de Oceanografía

Continuation du même programme général que pour 1966. Au Laboratoire de Santander on projète pour 1967 l'étude de la productivité primaire de la zone en employant la technique du C<sup>14</sup>.

Instituto de Investigaciones Pesqueras

Pour la période 1967 on étudiera le phytoplancton et la productivité primaire des régions: Barcelona, Castellon, Cadix, Ría de Vigo et de la Mer Thyrrhenienne.

Sweden

(A. Lindquist)

Most work has been done on material collected during previous years. In the Skagerrak-Kattegat area ichthyoplankton, chaetognatha and copepoda have been studied in detail as to their distribution etc. In the Baltic routine samples have been collected. C<sup>14</sup> measurements have been made in the Baltic on the lightvessels Hävrings and Finngrundet twice a month.



United Kingdom

I. England

(J.G. Cattley)

Most of the plankton sampling has again been concerned with studies of fish eggs and larvae, and much of this work has been done with High Speed Samplers of designs based on the Gulf III Sampler. Fish eggs and larvae have taken precedence in the analysis of the samples.

a) Faroes

A survey of 29 stations over Faroe Bank and the surrounding deep water was made in early June for gadoid larvae.

b) Irish Sea

The distribution of plaice and dab larvae in an area to the east of a line from Anglesey to the south of the Isle of Man was studied on two cruises in April-May and June. A grid of stations was worked on each cruise: four "24-hour stations" were worked with a changing net to study the vertical distribution of larvae and the distribution of larvae near the bottom was studied with a sledge net. The distribution of Phaeocystis was also studied. In June a grid of stations was worked in Cardigan Bay for turbot and brill eggs and larvae.

c) Celtic Sea

A few stations were worked in April for mackerel eggs and larvae.

d) Southern North Sea

Three surveys for herring larvae were made in the Southern Bight and the eastern English Channel; one in January and the other two in late November and mid-December.

A study of the escape of plaice larvae from nets was made in the Southern Bight in March.

In early August a few stations were worked off the Lincolnshire coast for the larvae of brill.

e) Other work

The British Ocean Weather Ships continued to take vertical hauls for zooplankton when on stations A, I, J or K.

II. Scotland

Aberdeen (J.H. Fraser)

Plankton was sampled in 1966 in the northern North Sea between April and November. Some samples were taken in the area of the Norwegian Deep in April/May, July and November; off the Danish coast in August; in the Faroe-Shetland Channel in May; and off the west coast of Scotland in March and June. Collections were also taken in connection with food-chains studies in Scottish lochs.

The work at the Aberdeen laboratory was continued on the following lines:-

a) Plankton and its relation to the general environment and the fishery (Zooplankton, J.H. Fraser; Phytoplankton, D.D. Seaton).

b) Routine collection of zooplankton standing crop data (biomass and dry weight) from the northern North Sea and west coast waters (J.A. Adams).

c) Herring-plankton relationships in the northern North Sea (J.A. Adams).

d) Population studies of euphausiids: No new data were obtained during 1966 for the study of other species (e.g. Metridia lucens) but this will be recommenced as soon as possible.

- e) Factors associated with the use of the Gulf III Sampler, e.g. shooting speeds, depth and length of warp, efficiency etc. (J.A. Adams).
- f) Reproduction in Rhizosolenia (D.D. Seaton).
- g) Food of predatory species, especially Pleurobrachia (J.H. Fraser).
- h) The effects of gibberellins 1-4 and kinetin on algal growth and the extraction of these hormones from marine algae (Mrs. S.M. Reid).
- i) Studies of zooplankton populations, particularly bivalve larvae, in fertilised tanks (Dr. Ann Ralph) and populations in inshore lochs (N.T. Nicoll).
- j) Surveys in September to measure the abundance and distribution of herring larvae in the area between 55°30' and 60°00'W from the Scottish coast, to the prime meridian (A. Saville).

#### Programme for 1967

In general the work in 1967 will follow a similar pattern to 1966.

#### Edinburgh (R.S. Glover)

Continuous Plankton Recorders have been towed throughout the year in the North Atlantic (north of 45°N) and the North Sea, providing a total of about 102,000 miles of sampling at the standard depth of 10 metres.

The first steps have been taken in the production of a Plankton Atlas of the North Atlantic; it is expected that this will include charts of the distribution and abundance of about 200 organisms.

The survey of the plankton of the drift-net fishing grounds off Shetland and north-east Scotland was continued.

#### U.S.S.R.

(A. Bogdanov)

#### Polar Research Institute of Fisheries and Oceanography (PINRO)

During 1966 data on the qualitative and quantitative distribution of phytoplankton and zooplankton (in the Norwegian Sea) and macroplankton in the Barents Sea were collected.

During the spring-summer cruises (April-June) 773 zooplankton samples were taken on the routes of drifting of commercial fish larvae in the Barents Sea. Of those samples 112 were taken off the north-west coast of Norway, 447 in the eastern part of the Norwegian Sea, 98 in the area of Bear Island and 116 in the south-western part of the Barents Sea.

During 4 cruises 179 macroplankton samples were taken in the Barents Sea, 2,130 zooplankton specimens were sampled in herring-feeding areas in the Norwegian Sea where 13 cruises were made; 650 phytoplankton samples were taken by means of Nansen bathometer; 4 cruises were made.

The research programme for 1967 will not change. Zooplankton will be sampled on the routes of drifting of the fish larvae in the Barents Sea, in herring-feeding areas in the Norwegian Sea, macroplankton in the Barents Sea, phytoplankton in the Norwegian Sea.

#### Baltic Research Institute of Fisheries and Oceanography

The abundance and distribution of zooplankton were studied (in the Baltic Sea, the Gulf of Riga and the Gulf of Finland) by area, depths zones and seasons.

The dynamics of the abundance of the main species of zooplankton was studied by seasons and for a number of years.

The following aspects were investigated: The principal factors of the oceanographic regime having effect on the zooplankton abundance, times of their spawning, mortality-rate at different stages of ontogenesis, the relationship between the parent and offspring abundance, the influence of fish on the zooplankton stocks. The methods of mathematic analysis and electronic computing machines were used. A forecast for the stock condition of the main species of zooplankton in 1967 was made.